

Translation

PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference PCT0302ND | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/JP2003/002890 | International filing date (day/month/year) 12 March 2003 (12.03.2003) | Priority date (day/month/year) 15 March 2002 (15.03.2002) |
| International Patent Classification (IPC) or national classification and IPC G02B 1/10 | | |
| Applicant NITTO DENKO CORPORATION | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

| | |
|---|---|
| Date of submission of the demand 16 July 2003 (16.07.2003) | Date of completion of this report 01 March 2004 (01.03.2004) |
| Name and mailing address of the IPEA/JP | Authorized officer |
| Facsimile No. | Telephone No. |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2003/002890

I. Basis of the report

1. With regard to the elements of the international application:^{*} the international application as originally filed the description:

pages _____ 1-32, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

 the claims:

pages _____ 8-10, 15, as originally filed

pages _____ 1, 3-7, 11-13, as amended (together with any statement under Article 19

pages _____, filed with the demand

pages _____ 14, filed with the letter of _____

 the drawings:

pages _____ 1-4, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

 the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language _____ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. The amendments have resulted in the cancellation of: the description, pages _____ the claims, Nos. _____ 2 the drawings, sheets/fig _____5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).^{**}

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.
PCT/JP 03/02890

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|---------|-----|
| Novelty (N) | Claims | 1, 3-15 | YES |
| | Claims | None | NO |
| Inventive step (IS) | Claims | None | YES |
| | Claims | 1, 3-15 | NO |
| Industrial applicability (IA) | Claims | 1, 3-15 | YES |
| | Claims | None | NO |

2. Citations and explanations

Document 1: JP 2002-6109 A (Tomoegawa Paper Co., Ltd.),
09 January 2002, & US 2002/0034008 A1

Document 2: JP 59-52601 A (Kabushiki Kaisha Suwa
Seikosha), 28 March 1983

Document 3: JP 63-21601 A (Toray Industries, Inc.), 29
January 1988

Document 4: US 4904525 A (Toray Industries, Inc.), 27
February 1990, & JP 64-1527 A

Document 5: JP 2000-47005 A (Teijin Ltd.), 18 February
2000

Document 6: US 6008940 A (Konica Corp.), 28 December
1999, & JP 9-251101 A

Claims 1, 3 and 4

The invention set forth in claims 1, 3 and 4 does not involve an inventive step in the light of documents 1 and 6. Document 1 discloses an anti-reflection film configured from regions that comprise silica microgranules within a region that has a fluorine-containing material as the primary component (paragraphs [0032] to [0042]), and it would be obvious to a person skilled in the art to configure so that the refraction index of the silica microgranules is 1.49 or less, as disclosed in document 6. Therefore, the fluorine-containing material and the silica

microgranules disclosed in document 1 correspond to the two types of low index of refraction material in the invention set forth in claims 1, 3 and 4. In addition, it would be obvious to a person skilled in the art that the region of the fluorine-containing material and the regions of the silica microgranules in the invention disclosed in document 1 constitute a sea-island structure. Furthermore, document 1 indicates that the silica microgranule regions range from 5-1000nm in size.

Claim 5

The invention set forth in claim 5 does not involve an inventive step in the light of documents 1, 2 and 5. Document 5 discloses an anti-reflection film that is formed from regions that have a polysiloxane structure as the primary component within a region that has a fluorine-containing material as the primary component (paragraphs [0012] to [0015]). It would be obvious to a person skilled in the art to configure so that the refractive indices of the fluorine-containing material and the material having a polysiloxane structure are 1.49 or less, as disclosed in documents 1 and 2. Document 5 indicates that the region that has a fluorine-containing material as the primary component and the regions that have a polysiloxane structure as the primary component constitute a sea-island structure (paragraphs [0006] and [0015], and fig. 2).

Claims 6-13

The inventions set forth in claims 6-13 do not involve an inventive step in the light of documents 1, 2, 5 and 6. Documents 1 and 5 disclose the feature of providing the anti-reflection layer via a hard coat layer. Likewise, document 1 discloses a feature wherein the anti-reflection layer has an anti-glare characteristic as a result of its uneven form, a feature wherein the anti-

reflection layer is provided via a hard coat layer having an uneven surface that was roughened by means of dispersed microgranules, and a feature wherein the anti-reflection layer is provided as a protective film upon a polarization plate.

Claims 14 and 15

The invention set forth in claims 14 and 15 does not involve an inventive step in the light of documents 1, 2, 3 and 5. Document 5 discloses the feature of coating with a coating solution, which comprises two types of low index of refraction material that have been dissolved in a solvent, in order to obtain an anti-reflection layer with a separated structure comprising different regions. It would be obvious to a person skilled in the art to configure so that the refractive indices of the two types of low index of refraction material are 1.49 or less, as disclosed in documents 1 and 2. Likewise, it would be obvious to a person skilled in the art to use a ketone solvent or an alcohol solvent as the solvent, as disclosed in document 3.

Claims (amendment under rule 19)

1.(amended) An antireflection film comprising an
5 antireflection layer being formed at least on one side of a
transparent base film directly or through an other layer,
whrerein the antireflection layer is made of at least two
kinds of low refractive index materials satisfying a relationship of
refractive index: $n_d^{20} \leq 1.49$, and

10 the antireflection layer has a separated structure in which
mutually different areas are formed.

2.(deleted).

3.(amended) The antireflection film according to Claim 1,
wherein the separated structure has a continuous matrix with
15 dispersed phase structure.

4.(amended) The antireflection film according to Claim 1 or
Claim 3, wherein a size of a short area in the separated structure is
in a range of 5 to 1,000 nm.

5.(amended) The antireflection film according to Claim
20 1 ,Claim3 or Claim 4, wherein the antireflection layer is formed of
an area made of a material having fluorine as a principal
component and an area made of a polysiloxane structure as a
principal component.

6.(amended) The antireflection film according to any of
25 Claim 1, Claim3 to Claim 5, wherein the antireflection layer is

formed through a hard coat layer.

7. (amended) The antireflection film according to any of
Claim 1, Claim3 to Claim 5, wherein the antireflection layer has an
5 uneven shape and antiglare property.

8. The antireflection film according to Claim 7, wherein
the antireflection layer is formed through a hard coat layer in
which particles are dispersed and the uneven shape surface is
formed with the particles.

10 9. The antireflection film according to Claim 7 or Claim 8,
wherein a 60° glossiness of a surface of the antireflection layer is
20 to 120%.

10. The antireflection film according to Claim 7 to Claim 9,
wherein a Haze value is 10 to 60%.

15 11.(amended) A polarizing plate comprising a polarizer and
a protective film being formed on one side or both sides of the
polarizer,

20 wherein a transparent base film of the antireflection film
according to any of Claim 1, Claim3 to Claim 10 is formed on one
side or both sides of a polarizer as the protective film.

12.(amended) An optical element comprising the
antireflection film according to any of Claim 1, Claim3 to Claim 10
or the polarizing plate according to Claim 11.

13.(amended) An image viewing display comprising the
25 antireflection film according to any of Claim 1, Claim3 to Claim 10,

the polarizing plate according to Claim 11 or the optical element according to Claim 12.

14. **A method for manufacturing an antireflection film comprising an antireflection layer being formed at least on one**
5 **side of a transparent base film directly or through an other layer,**
comprising the steps of:

coating a coating liquid including at least two kinds of low refractive index materials satisfying a relationship of refractive index: $n_d^{20} \leq 1.49$ dissolved in a solvent; and

10 **drying a coated layer to give the of the antireflection layer.**

15. **The method for manufacturing the antireflection film according to Claim 14, wherein the low refractive index material comprises a material having fluorine and a polysiloxane forming material, and the solvent is a mixed solvent comprising a ketone solvent and an alcohol solvent.**

Claims (amendment under rule 34)

11. A polarizing plate comprising a polarizer and a protective film being formed on one side or both sides of the
5 polarizer,

wherein a transparent base film of the antireflection film according to any of Claim 1, Claim3 to Claim 10 is formed on one side or both sides of a polarizer as the protective film.

12. An optical element comprising the antireflection film
10 according to any of Claim 1, Claim3 to Claim 10 or the polarizing plate according to Claim 11.

13. An image viewing display comprising the antireflection film according to any of Claim 1, Claim3 to Claim 10, the polarizing plate according to Claim 11 or the optical element
15 according to Claim 12.

14.(amended) A method for manufacturing an antireflection film comprising an antireflection layer being formed at least on one side of a transparent base film directly or through an other layer, comprising the steps of:

20 coating a coating liquid including at least two kinds of low refractive index materials satisfying a relationship of refractive index: $n_d^{20} \leq 1.49$ dissolved in a solvent; and
drying a coated layer to give the of the antireflection layer,
wherein the antireflection layer has a separated structure in which
25 mutually different areas are formed.

15. The method for manufacturing the antireflection film according to Claim 14, wherein the low refractive index material comprises a material having fluorine and a polysiloxane forming material, and the solvent is a mixed solvent comprising a ketone
5 solvent and an alcohol solvent.